

Lung stem cell found, controversy ensues

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Scientists at Brigham and Women's Hospital in Boston have reported that they identified a stem cell in lung. The work was published in the May 12 issue of the *New England Journal of Medicine*.

In the popular press you often read that adult stem cells exist in all the tissues of the body. This is likely true, but the reality is that scientists have only identified stem cells in a handful of tissues. They think all or most tissues contain a reservoir of restorative stem cells, but can't necessarily put their finger on them. And cells you can't identify are cells you can't turn into therapies or use to study disease.

Now that the team has isolated these potential lung stem cells, they can start thinking about using them. An Associated Press story quotes the study's authors Piero Anversa and Joseph Loscalzo:

“ Loscalzo said it's too early to tell what lung diseases might be treated someday by using the cells. He said researchers are initially looking at emphysema and high blood pressure in the arteries of the lungs, called pulmonary hypertension. Emphysema is a progressive disease that destroys key parts of the lung, leaving large cavities that interfere with the lung's function.

“ Anversa said the cells may also prove useful to build up lungs after lung cancer surgery. It's not clear whether they could be used in treating asthma, he said.

“ While a lung stem cell theoretically could be used to grow a lung in a lab for transplant, Loscalzo said that would be very difficult because the lung is so complex. Instead, he said, scientists will first look at isolating the cells from a patient, multiplying them in the laboratory, and then injecting them back into the patient's lung.

Nature has a blog entry on this paper in which they point out that Anversa has made controversial claims about stem cells in the past, including a 2001 paper in which he claimed bone marrow stem cells could turn into heart muscle in mice, work that Stanford's Irv Weissman said he couldn't replicate.

Nature quotes Amy Wagers, one-time post-doctoral researcher with Weissman and now scientific neighbor of Anversa's. Wagers works at the Joslin Diabetes Center, also affiliated with Harvard:

“ When I began my position as a postdoctoral fellow in Irv Weissman's lab at Stanford, there was a lot of enthusiasm surrounding the idea that hematopoietic stem cells in the bone marrow might spontaneously transdifferentiate to produce non-blood tissues. I rigorously tested this idea and found such activity to be negligible, if present at all. That changed the course of investigation by shifting the emphasis towards defining endogenous tissue progenitor cells that carry out regenerative functions.

All this just goes to show that grand pronouncements (or perhaps just simplified pronouncements) in the press don't always tell the full story about the science. Time will tell whether the lung stem cells announce today will turn out to be therapeutically useful, and in what way.

A.A.

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